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(54) Hair conditioner composition.

(57) A hair conditioner composition is disclosed, which comprises (A) a fatty acid having a straight-chain acyl group containing 18 to 28 carbon atoms, and (B) a cationic surfactant, wherein a weight ratio of component (A) to component (B) is from 1.5/1 to 4/1. The hair conditioner composition has a beautiful pearl-like appearance, imparts a natural gloss to hair, exhibits an excellent UV ray-screening effect, and prevents hair from being disheveled during sleep.

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FIELD OF THE INVENTION

This invention relates to a hair conditioner composition and more particularly a hair conditioner composition showing a pearl-like appearance (a pearly luster), having an UV ray-screening effect, imparting a natural gloss to hair, and preventing hair from being disheveled during sleep.

BACKGROUND OF THE INVENTION

To impart a pearl-like appearance, fish scale guanine or an inorganic mineral, such as mica-based synthetic pearl or titanium dioxide, is contained in some conventional hair cosmetic compositions. Also, to impart gloss to hair, a liquid oil or silicone is contained in some conventional hair cosmetic compositions.

However, the inorganic minerals sometimes which are added in the hair cosmetic composition to impart thereto a pearl-like appearance sometimes cause a squeaky feel or a stiff feel to hair. On the other hand, a hair cosmetic composition containing the liquid oil or silicone can impart an oily gloss to hair but it hardly produces a natural gloss.

It has therefore been demanded to develop a hair conditioner composition which has a beautiful pearl-like appearance and is capable of imparting a natural gloss to hair.

SUMMARY OF THE INVENTION

As a result of extensive study, the present inventors found that a hair conditioner composition containing a specific fatty acid and a cationic surfactant at a specific ratio shows a beautiful pearl-like appearance, imparts a natural gloss to hair, have an excellent UV ray-screening effect, and prevent hair from being disheveled because of sleep. The present invention has been completed based on this finding.

Namely, the present invention provides a hair conditioner composition comprising:

(A) a fatty acid having a straight-chain acyl group containing 18 to 28 carbon atoms, and

(B) a cationic surfactant wherein a weight ratio of component (A) to component (B) is from 1.5/1 to 4/1.

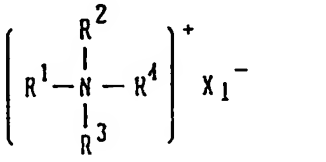
The present invention also provides a method for imparting gloss to hair which comprises applying to hair the hair conditioner composition.

DETAILED DESCRIPTION OF THE INVENTION

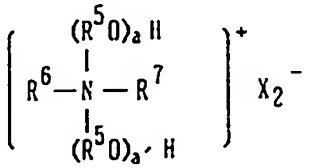
Examples of the fatty acid as component (A) include stearic acid, nonadecanoic acid, arachic acid, behenic acid, lignoceric acid, cerotic acid, heptacosanoic acid, and montanic acid. Among them, behenic acid is particularly preferred since it is easy to be formulated into cosmetics, it is easily available from commercial products and it gives an excellent pearl-like appearance. These fatty acids are industrially available.

From the standpoint of viscosity suitable for use, component (A) is preferably used in an amount of from 1.0 to 15.0 % by weight, particularly from 3.0 to 10.0 % by weight, based on the total composition.

The cationic surfactant as component (B) includes quaternary ammonium salts represented by formula (1) or (2):



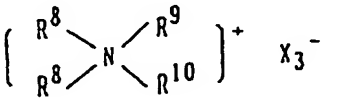
(1)



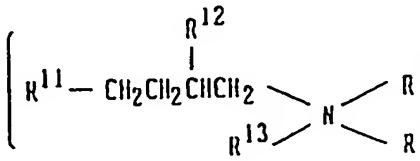
(2)

wherein at least one of R^1, R^2, R^3, and R^4 represents an alkyl or alkenyl group having 8 to 28 carbon atoms in total, which may be substituted by a substituent selected from an alkoxy, alkenyloxy, alkanoylamino and alkenoylamino groups, and the other(s) represent a benzyl group or an alkyl or hydroxyalkyl group having 1 to 5 carbon atoms; R^5 represents an alkylene group having 2 or 3 carbon atoms; X_1^- and X_2^- each represents a halogen ion or an organic anion; a and a' each represents an integer of 1 to 20; and at least one of R^6 and R^7represents an alkyl or alkenyl group having from 8 to 28 carbon atoms in total, which may be substituted by a substituent selected from an alkoxy, alkenyloxy, alkanoylamino and alkenoylamino groups, and the other represents a benzyl group or an alkyl or hydroxyalkyl group having 1 to 5 carbon atoms.

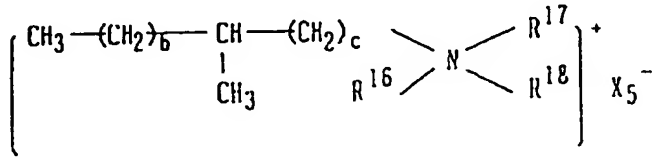
Among these quaternary ammonium salts, ones represented by formula (1) are preferred, and of the quaternary ammonium salts represented by formula (1), ones represented by following formula (3), (4) or (5) are particularly preferred.



(3)

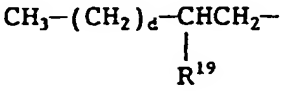


(4)



(5)

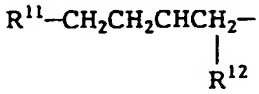
wherein R^8 represents a mixture of (a) a branched alkyl group represented by formula:



wherein R^{19} represents a methyl group or an ethyl group; and d represents an integer to give a total carbon atom number to the branched alkyl group (a) of 8 to 16,
and (b) a straight-chain alkyl group represented by formula:

$CH_3-(CH_2)_e-$

wherein e represents an integer of 7 to 15, the mixture having a branching ratio (a)/((a) + (b)) of from 10 to 100 %; R^9 and R^{10} each represents a benzyl group or an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms; R^{11} and R^{12} each represents an alkyl group having 2 to 12 carbon atoms; R^{13} represents a group of formula:



or an alkyl group having 1 to 3 carbon atoms; R^{14} and R^{15} each represents a benzyl group or an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms; R^{16} represents a group of formula:

$$CH_3-(CH_2)_b-\underset{\displaystyle CH_3}{\underset{|}{CH}}-(CH_2)_c-$$

wherein b represents an integer of 2 to 14; and c represents an integer of 3 to 11; provided that the sum of b and c is from 9 to 21, or an alkyl group having 1 to 3 carbon atoms; R^{17} and R^{18} each represents a benzyl group or an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms; and X_3^-, X_4^-, and X_5^- each represents a halogen ion or an organic anion.

The branched quaternary ammonium salts represented by formula (3) may be synthesized by using, for example, an oxo alcohol having 8 to 16 carbon atoms. Examples of the compounds of formula (3) include dialkyldimethylammonium salts, dialkylmethylhydroxyethylammonium salts and dialkylmethylbenzylammonium salts, the alkyl moiety of which is derived from the oxo alcohol.

The branching ratio (a)/((a) + (b)) of R^8 in formula (3) is usually from 10 to 100 % and preferably from 10 to 50 %. The total carbon atom number of the alkyl group represented by R^8 is from 8 to 16. It is preferable that the mixed alkyl group has a certain distribution of carbon atom number, especially a distribution shown below:

C_{8-11}:	5 % or less
C_{12}:	10 to 35 %
C_{13}:	15 to 40 %
C_{14}:	20 to 45 %
C_{15}:	5 to 30 %
C_{16}:	5 % or less

Examples of the compounds of formula (3) include a dialkyldimethylammonium chloride wherein the alkyl group has from 8 to 16 carbon atoms and a branching ratio of from 10 to 50 %.

The branched quaternary ammonium salts of formula (4) are generally synthesized from a Guerbet alcohol represented by formula (6):

$$R^{11}-CH_2CH_2\underset{\displaystyle R^{12}}{\underset{|}{CH}}CH_2OH \qquad (6)$$

wherein R^{11} and R^{12} are as defined above.

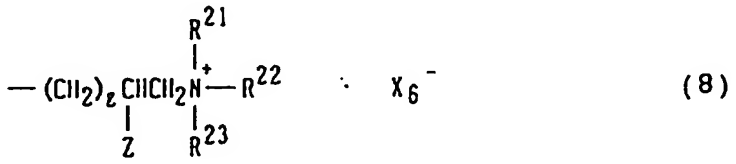
Preferred examples of the quaternary ammonium salt of formula (4) include alkyltrimethylammonium salts, alkyldimethylbenzylammonium salts, dialkyldimethylammonium salts, dialkylmethylhydroxyethylammonium salts and dialkylmethylbenzylammonium salts, the alkyl moiety of which is derived from a Guerbet alcohol. Among them, 2-decyltetradecyltrimethylammonium chloride, 2-dodecylhexadecyltrimethylammonium chloride, di-2-hexyldecyldimethylammonium chloride, and di-2-octyldodecyldimethylammonium chloride are preferred.

Examples of the methyl-branched quaternary ammonium salt of formula (5) include those in which the sum of b and c is 15.

The quaternary ammonium salt as component (B) further includes quaternary ammonium salts represented by formula (7):

$$R^{20}-M-(CH_2)_f-\underset{\displaystyle Y}{\underset{|}{N}}-(CH_2)_g\underset{\displaystyle Z}{\underset{|}{CH}}CH_2\overset{\displaystyle R^{21}}{\overset{|}{\overset{+}{N}}}-R^{22}\cdot X_6^- \qquad (7)$$

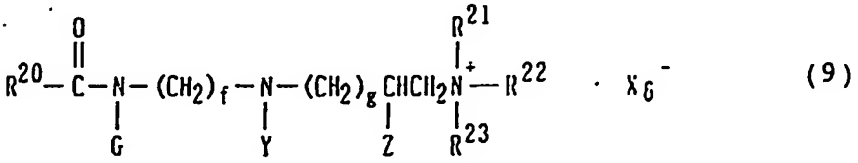
wherein R^{20} represents a straight-chain or branched alkyl or alkenyl group having 7 to 21 carbon atoms; R^{21}, R^{22}, and R^{23} each represents an alkyl or hydroxyalkyl group having 1 to 4 carbon atoms; M represents -CONG- (wherein G represents a hydrogen atom or an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms, provided that the carbonyl group of which is bonded to R^{20}), -O- or -COO- (provided that the carbonyl group of which is bonded to R^{20}); X_6^- represents a halogen ion or an organic anion; f represents 2 or 3; g represents 0 or an integer of 1 to 5; Z represents a hydrogen atom or a hydroxyl group; and Y represents a hydrogen atom, an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms, or a group represented by formula (8):



(8)

wherein R^{21}, R^{22}, R^{23}, X_6^-, Z, and g are as defined above; provided that G and Y do not represent an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms simultaneously and that when g is 0, 2, 3, 4 or 5, Z represents a hydrogen atom.

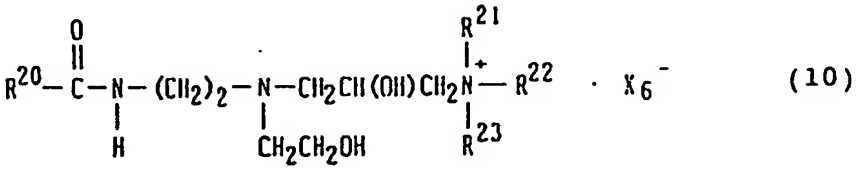
Of the cationic surfactants of formula (7), those represented by formula (9) are preferred:



(9)

wherein R^{20}, R^{21}, R^{22}, R^{23}, X_6^-, G, Y, Z, f, and g are as defined above.

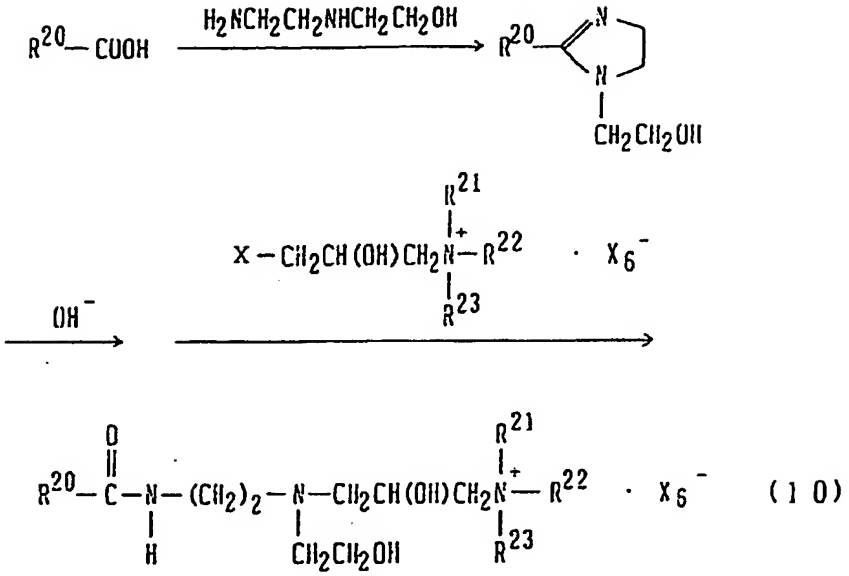
In particular, those represented by formula (10) are preferred:



(10)

wherein R^{20}, R^{21}, R^{22}, R^{23}, and X_6^- are as defined above.

The quaternary ammonium salts of formula (7) can be prepared by known methods, for example, the method described in JP-A-5-155835 (the term "JP-A" as used herein means an "unexamined published Japanese patent application"). For instance, the compound of formula (10) can he obtained by reacting a corresponding fatty acid with aminoethyl-ethanolamine to form an imidazoline derivative, which is further treated with an alkali and then reacted with a corresponding ammonium compound as shown in the following reaction scheme:



wherein R^{20}, R^{21}, R^{22}, R^{23}, and X_6^- are as defined above; and X represents a halogen atom or an organic anionic group.

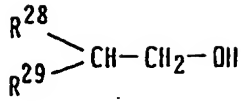
It is preferred that the product as obtained by the above method is desalted by, for example, electrodialysis to improve the dissolving characteristics or the viscosity characteristics.

The quaternary ammonium salt as component (B) furthermore includes asymmetric quaternary ammonium salts represented by formula (11):

wherein R^{24} represents a branched alkyl group having 8 to 28 carbon atoms in total; R^{25} represents a straight-chain alkyl or alkenyl group having 8 to 22 carbon atoms; R^{26} and R^{27} each represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms; and X_7^- represents a halogen ion or an organic anion; provided that R^{26} and R^{27} do not represent a hydrogen atom simultaneously.

The alkyl group represented by R^{24} in formula (11) is derived from a Guerbet alcohol or an oxo alcohol as described above. Examples of the alkyl group as R^{24} include 2-(3-methylhexyl)-7-methyl-1-decyl, 2-(1-methyl-3,3-dimethylbutyl)-5-methyl-7,7-dimethyloctyl, and 2-hexyl-1-decyl groups.

The terminology "Guerbet alcohol" as used herein generally means an alcohol represented by formula (6), and the terminology "oxo alcohol" as used herein generally means an alcohol obtained from an α-olefin by an oxo process and derivatives thereof. Examples of the oxo alcohol include alcohols represented by formulae (12) and (13):



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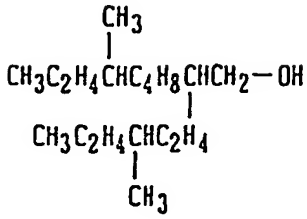
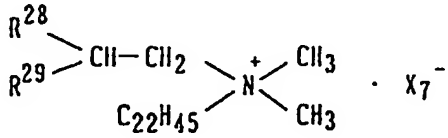


(13)

wherein R^{28} represents an alkyl group having 1 to 5 carbon atoms; and R^{29} represents an alkyl group having 5 to 10 carbon atoms; provided that the total carbon atom number in R^{28} and R^{29} is 10 or 11.

Specific examples of these alcohols are Fine Oxo Alcohol 140, 1600, 180, 180N, 1800, 2000 or 2600, produced by Nissan Chemical Industries, Ltd.; Diadol 18G, produced by Mitsubishi Chemical Industries Ltd.; Dobanol 23-1, produced by Mitsubishi Petrochemical Co., Ltd; EXXAL 18 and EXXAL 20, produced by Exxon Kagaku K.K.; Emasol 871, produced by Emery Industries Inc.; and isostearyl alcohol obtained by methyl esterifying Evasol 871, followed by reduction.

Preferred examples of the asymmetric quaternary ammonium salts of formula (11) include N-2-(3-methylhexyl)-7-methyl-1-decyl-N-dodecyl-N,N-dimethylammonium chloride, N-2-(3-methylhexyl)-7-methyl-1-decyl-N-octyl-N,N-dimethylammonium chloride, N-2-hexyl-1-decyl-N-dodecyl-N,N-dimethylammonium chloride, and compounds represented by formula (14):



(14)

wherein R^{28}, R^{29}, and X_7^- are as defined above.

The halogen ion or organic anion represented by X_1^-, X_2^-, X_3^-, X_4^-, X_5^-, X_6^-, or X_7^- includes a chloride ion, a bromide ion, and an iodide ion, or a methosulfate ion, an ethosulfate ion, a methophosphate ion, and an ethophosphate ion.

The above-mentioned cationic surfactants may be used either singly or in combination of two or more thereof. From the standpoint of the viscosity suitable for use, component (B) is preferably used in an amount of from 0.25 to 7.5 % by weight, more preferably from 0.75 to 5 % by weight, based on the total composition.

A weight ratio of component (A) to (B) in the hair conditioner composition of the present invention is from 1.5/1 to 4/1, preferably from 2.5/1 to 3.5/1. If it is less than 1.5/1, a satisfactory pearly luster cannot be obtained. If it exceeds 4/1, the whole system has poor stability.

A higher alcohol may be contained in the hair conditioner composition of the present invention. However, it is important that the hair conditioner composition of the present invention should not contain higher alcohol(s) in an amount exceeding 1/3 by weight of component (A). The terminology "higher alcohol" as used herein means mono- or polyhydric alcohol whose hydrocarbon group has 7 or more carbon atoms. If the content of such higher alcohols exceeds 1/3 the weight of component (A), the pearly luster of the hair conditioner composition tends to be lost.

The hair conditioner compositions of the present invention preferably have a pH value of from 2 to 7, more preferably from 3 to 6. If the pH value is less than 2, the composition is too irritative to the skin, thus such is not preferred in view of safety. If it exceeds 7, the composition hardly shows a pearl-like appearance. The pH can be adjusted with known acidic or alkaline chemicals generally employed in hair cosmetics.

If desired, the hair conditioner compositions of the present invention may contain other components usually added to hair cosmetics so long as the effects of the present invention are not impaired. Such optional components include additives for improving feel to the touch, such as squalene, lanolin, dimethylpolysiloxane, high-molecular weight polysiloxane, methylphenylpolysiloxane, water-soluble polyether-modified silicone, amino-modified silicone, carboxyl-modified silicone, perfluoropolyethers, and cationic polymers described in JP-A-58-53996 and JP-A-1-117821; humectants, such as propylene glycol, glycerin, and sorbitol; viscosity modifiers, such as methyl cellulose, carboxyvinyl polymers, hydroxyethyl cellulose, polyoxyethylene glycol distearate, and ethanol; pearling agents; perfumes; colorants; UV absorbents; antioxidants; bactericides, such as Triclosan and Trichlocarban; antiinflammatory agents, such as potassium glycyrrhizinate and tocopherol acetate; anti-dandruff agents, such as zinc pyrithione and Octopirox; antiseptics, such as methylparaben and butylparaben; and other additives as described in Encyclopedia of Shampoo Ingredients, Micelle Press (1985).

The hair conditioner composition of the present invention can be prepared by uniformly mixing the above-mentioned components in a conventional manner. The hair conditioner composition according to the present invention may be formulated into a hair treatment, a hair rinse, a hair conditioning foam, a hair styling preparations, a permanent wave setting lotion, a hair dye, a coloring rinses and a hair cream.

The hair conditioner composition of the present invention shows a beautiful pearl-like appearance, imparts a natural gloss to hair, exhibits an UV ray-screening effect, and prevents hair from being disheveled during sleep.

The present invention will now be illustrated in greater detail with reference to Examples, but it should be understood that the present invention is not construed as being limited thereto. All the percents are given by weight except where noted.

EXAMPLE 1

Hair treatment compositions of the composition shown in Table 1 were prepared in a conventional manner. The pearl-like appearance of the composition and the effects of the composition in glossing, UV-screening, and preventing hair from being disheveled during sleep were evaluated in the following manner. The results are shown in Table 1.

(1) Pearl-like appearance:

The pearl-like appearance of the composition was observed with the naked eye and rated in accordance with the following criteria.

(Evaluation Criteria)

A: Excellent pearly luster
B: Pearly luster
C: Equivocal
D: None

(2) Gloss:

About 20 g of cold-permed hair of a Japanese woman (about 15 to 20 cm in length) was tied up in a bundle. After shampooing, 2 g of the hair treatment composition was uniformly applied to the hair, rinsed with running warm water at about 40 °C, and dried with a hair drier. The gloss of the thus treated hair was evaluated in accordance with the following criteria in comparison with the hair which was subjected to shampooing but not subjected to treatment with the hair treatment composition.

(Evaluation Criteria)

A: Very glossy
B: Glossy
C: Equivocal
D: None

(3) UV ray-screening effect:

About 20 g of cold-permed hair of a Japanese woman (about 15 to 20 cm in length) was tied up in a bundle. After shampooing, 1 g of the hair treatment composition was uniformly applied to the hair, rinsed with running warm water at about 40°C, and dried with a hair drier. The thus treated hair was exposed to UV light having a wavelength of 310 nm and an intensity of 0.7 mW/cm^2 for 100 hours by means of a solar simulator. The change of the color of the hair was observed with the naked eye and rated in accordance with the following criteria.

A: No change
B: Almost no change
C: Slight change
D: Noticeable change

(4) Prevention of Hair from being disheveled during sleep:

Ten female panel members shampooed in the evening, applied about 12 g of each of the hair treatment composition shown in Table 1 all over their hair, rinsed the treatment composition away in a usual manner, and took usual actions before their sleep. On the next morning, the state of their hair in terms of degree of the dishevelment was evaluated in comparison with that of the hair treated with Comparative Product 1 in accordance with the following criteria.

(Evaluation Criteria)

As compared with Comparative Product 1, a composition which gave a better result (less disheveling of hair) was rated 2, a composition which gave a slight better result was rated 1, a composition which gave an equivocal result was rated 0, a composition which gave a slight worse result was rated -1, and a composition which gave a worse result was rated -2. The average of the total points of each sample thus rated was graded as follows.

A: 1.0 or more
B: 0.5 or more but less than 1.0
C: -0.5 or more but less than 0.5
D: -1.0 or more but less than -0.5
E: less than -1.0

TABLE 1

Composition (% by weight)	Product of the Invention 1	2	3	Comparative Product 1	2	3	4
Stearyltrimethyl-ammoniun chloride	2	2	1	2	2	1	2
Dialkyldimethyl-ammonium chloride*1	-	1	1	-	1	1	-
N-(2-Decyl)tetra-decyl-N,N,N-trimethyl-ammonium chloride*2	-	-	1	-	-	1	-
Behenic acid	8	6	9	4	-	-	2
Stearic acid	-	-	-	-	-	-	-
Cetyl alcohol	-	-	-	2	6	9	-
Liquid lanolin	1	1	1	1	1	1	1
Vaseline	1	1	1	1	1	1	1
Liquid paraffin	1	1	1	1	1	1	1
Sodium hydroxide to adjust to	pH3	pH4	-	pH4	pH4	pH4	pH4
Triethanolamine to adjust to	-	-	pH4	-	-	-	-
Purified water	balance	balance	balance	balance	balance	balance	balance
Results of Evaluation:							
Pearl-like appearance	A	B	A	C	D	D	D
Hair gloss	A	B	A	C	C	C	D
UV ray-screening effect	A	B	A	C	D	D	D
Prevention of hair from being disheveled during sleep	A	A	A	C	D	D	C

Note: *1: Branched quaternary ammonium salt (branching ratio (degree of branching): 20 %), derived from a commercially available C_{12-15} oxo alcohol (a mixture of Dovanol 23 and Dovanol

45, produced by Mitsubishi Petrochemical Co., Ltd.)

*2: Synthesized from a Guerbet alcohol (Ejcol 240A, produced by New Japan Chemical Co., Ltd.)

As is apparent from the results shown in Table 1, all of Products of the Invention are superior to Comparative Products in terms of the pearl-like appearance, property of imparting a natural gloss to hair, UV ray-screening effect, and property of preventing hair from being disheveled during sleep.

EXAMPLE 2

A hair rinse having the following composition was prepared in a conventional manner.

Component	Amount (% by weight)
Distearyldimethylammonium chloride	1.0
Cetyltrimethylammonium chloride	0.5
Behenic acid	4.0
Stearic acid	1.0
Propylene glycol	5.0
Isopropyl myristate	2.0
Methylparaben	0.1
Perfume	0.3
Ion-exchanged water	Balance

EXAMPLE 3

A hair conditioning foam having the following composition was prepared in a conventional manner.

Component	Amount (% by weight)
Stearyltrimethylammonium chloride	0.2
N-(2-Dodecyl)hexadecyl-N,N,N-trimethylammonium chloride	0.1
Behenic acid	1.0
Glycerin	2.0
Ethanol	5.0
Polyoxyethylene(5) lauryl ether	0.3
Liquid paraffin	0.5
Methylpolysiloxane (200 cs)	0.5
Perfume	0.1
Propellant (LPG)	10.0
Ion-exchanged water	Balance

EXAMPLE 4

A styling preparation for hair setting with a drier having the following composition was prepared in a conventional manner.

Component	Amount (% by weight)
Cetyltrimethylammonium chloride	0.3
Behenic acid	1.0
Polymethacrylic ester	0.2
Polyethylene glycol 30000	0.1
Ethanol	20.0
Perfume	0.2
Ion-exchanged water	Balance

The hair conditioner compositions prepared in Examples 2 to 4 all showed a beautiful pearl-like appearance, imparted a natural gloss to hair, exhibited an excellent UV ray-screening effect, and prevented hair from being disheveled during sleep.

While the invention has been described in detail and with reference to specific examples thereof, it will be apparent to one skilled in the art that various changes and modifications can be made therein without departing from the spirit and scope thereof.

Claims

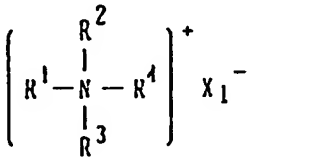
1. A hair conditioner composition comprising:
   (A) a fatty acid having a straight-chain acyl group containing 18 to 28 carbon atoms, and
   (B) a cationic surfactant wherein a weight ratio of component (A) to component (B) is from 1.5/1 to 4/1.

2. The hair conditioner composition of claim 1, wherein said composition has a pH of from 2 and 7.

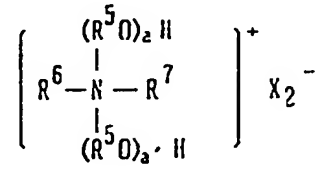
3. The hair conditioner composition of claims 1 or 2 wherein component (A) is present in an amount of from 1.0 to 15.0 % by weight and component (B) is present in an amount of from 0.25 to 7.5 % by weight.

4. the hair conditioner composition of any one of claims 1 to 3 wherein said component (A) is behenic acid.

5. The hair conditioner composition of any one of claims 1 to 4 wherein component (B) is at least one quaternary ammonium salt selected from the group consisting of those represented by formulae (1), (2), (7), and (11):



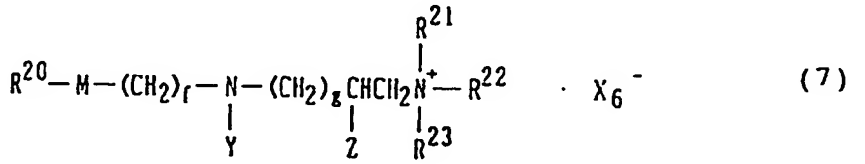
(1)



(2)

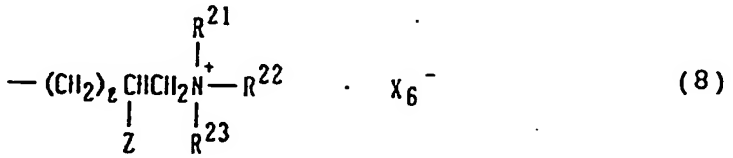
wherein at least one of R^1, R^2, R^3, and R^4 represents an alkyl or alkenyl group having 8 to 28 carbon atoms in total, which may be substituted by a substituent selected from an alkoxy, alkenyloxy, alkanoylamino and alkenoylamino groups, and the other(s) represent a benzyl group or an alkyl or hydroxyalkyl group having 1 to 5 carbon atoms; R^5 represents an alkylene group having 2 or 3 carbon

atoms; X_1^- and X_2^- each represents a halogen ion or an organic anion; a and a' each represents an integer of 1 to 20; and at least one of R^6 and R^7 represents an alkyl or alkenyl group having from 8 to 28 carbon atoms in total, which may be substituted by a substituent selected from an alkoxy, alkenyloxy, alkanoylamino and alkenoylamino groups, and the other represents a benzyl group or an alkyl or hydroxyalkyl group having 1 to 5 carbon atoms;



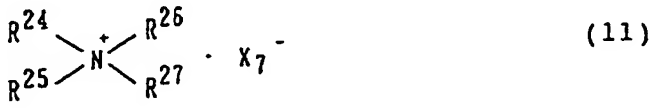
(7)

wherein R^{20} represents a straight-chain or branched alkyl or alkenyl group having 7 to 21 carbon atoms; R^{21}, R^{22}, and R^{23} each represents an alkyl or hydroxyalkyl group having 1 to 4 carbon atoms; M represents -CONG- (wherein G represents a hydrogen atom or an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms, provided that the carbonyl group of which is bonded to R^{20}), -O- or -COO- (provided that the carbonyl group of which is bonded to R^{20}); X_6^- represents a halogen ion or an organic anion; f represents 2 or 3; g represents 0 or an integer of 1 to 5; Z represents a hydrogen atom or a hydroxyl group; and Y represents a hydrogen atom, an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms, or a group represented by formula (8):



(8)

wherein R^{21}, R^{22}, R^{23}, X_6^-, Z, and g are as defined above; provided that G and Y do not represent an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms simultaneously and that when g is 0, 2, 3, 4 or 5, Z represents a hydrogen atom; and



(11)

wherein R^{24} represents a branched alkyl group having 8 to 28 carbon atoms in total; R^{25} represents a straight-chain alkyl or alkenyl group having 8 to 22 carbon atoms; R^{26} and R^{27} each represent a hydrogen atom or an alkyl group having 1 to 4 carbon atoms; and X_7^- represents a halogen ion or an organic anion; provided that R^{26} and R^{27} do not represent a hydrogen atom simultaneously.

6. The hair conditioner composition of claim 5, wherein component (B) is at least one compound selected from quaternary ammonium salts represented by formula (1).

7. The hair conditioner composition of claim 5 or 6 wherein said halogen ion is selected from the group consisting of a chloride ion, a bromide ion and an iodide ion.

8. The hair conditioner composition of any one of claims 5 to 7 wherein said organic anion is selected from the group consisting of a methosulfate ion, an ethosulfate ion, a methophosphate ion and an ethophosphate ion.

9. A method for imparting gloss to hair which comprises applying to hair a hair conditioner composition comprising (A) a fatty acid having a straight-chain acyl group containing 18 to 28 carbon atoms, and (B)

a cationic surfactant, wherein a weight ratio of component (A) to component (B) is from 1.5/1 to 4/1.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 11 8210

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X,P	WO-A-94 02111 (KAO CORPORATION) * the whole document *	1,3-8	A61K7/06 A61K7/50
X	CHEMICAL ABSTRACTS, vol. 97, no. 10, September 1982, Columbus, Ohio, US; abstract no. 78683, 'hair rinses containong quaternary ammonium salts and fatty esters' * abstract * & JP-A-57 053 402 (KAO SOAP)	1,3,5-7, 9	
P,X	S.T.N., File Supplier, Karlsruhe, DE, File Chemical Abstacts, vol 120, n 143674, * abstract *	1,3-7,9	
X	& JP-A-05 286 831 (KAO CORP.)	1,3-7,9	
X	S.T.N., File Supplier, Karlsruhe, DE, File Chemical Abstracts, vol 118, n 27261 * abstract * & JP-A-04 230 615 (KAO CORP)	1,3-7,9	
X	PATENT ABSTRACTS OF JAPAN vol. 6, no. 131 (C-114) (1009) & JP-A-57 056 412 (RAION K.K.) * abstract *	1,3,5-7, 9	TECHNICAL FIELDS SEARCHED (Int.Cl.6) A61K
X	EP-A-0 555 690 (HELENE CURTIS, INC.) * the whole document *	1-7,9	
X	EP-A-0 300 379 (HENKEL) * the whole document *	1-7,9	
X	EP-A-0 538 762 (KAO CORPORATION) * the whole document *	1-3,5-9	

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	25 January 1995	Fischer, J.P.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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A : technological background
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T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

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